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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/675,748 | 09/30/2003 | Nasser Nouri | 03226.324001; P8928 | 8004 |
| 32615 | 7590 | 04/06/2006 | EXAMINER | |
| OSHA LIANG L.L.P./SUN 1221 MCKINNEY, SUITE 2800 HOUSTON, TX 77010 | | | LO, SUZANNE | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2128 | |

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/675,748 | NOURI ET AL. | |
| | Examiner | Art Unit | |
| | Suzanne Lo | 2128 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/30/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-30 have been presented for examination.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-30 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Specifically, claims 1-30 do not produce a tangible result. The claims do not enable their usefulness to be realized, there is only computation and comparison being performed and there is no display or an output generated from the comparison.

Specifically, claims 1-10 and 25-27 are software *per se*, which is abstract.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 7-8, 10-11, 13-16, 18-25, 27-28, and 30 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by McNamara et al. (U.S. Patent No. 6,141,630).

As per claim 1, McNamara is directed to a system for evaluating a simulation comprising: a reference simulator configured to execute a simulation image to obtain golden data (column 5, lines 32-

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45); a test simulator configured to execute the simulation image to obtain test data (column 4, line 66 – column 5, line 4); and a comparator configured to generate a comparison result by comparing a portion of the golden data to a portion of the test data before the execution of the simulation image on the test simulator has completed (column 7, lines 18-36).

As per claim 2, McNamara is directed to the system of claim 1 further comprising: a golden data repository storing the golden data (column 5, lines 32-45); a user data used by the comparator to select the portion of the golden data and the portion of the test data (column 4, lines 46-57); and a compiler configured to generate the simulation image by compiling a simulation design and the user data (column 7, lines 12-19).

As per claim 3, McNamara is directed to the system of claim 1, wherein comparing the portion of the golden data to the portion of the test data occurs dynamically (column 7, lines 19-36).

As per claim 4, McNamara is directed to the system of claim 3 further comprising: a buffer to store the golden data (column 5, lines 32-45).

As per claim 5, McNamara is directed to the system of claim 4, wherein the comparator is configured to wait to compare the portion of the test data until after the golden data is stored in the buffer (column 5, lines 32-45).

As per claim 7, McNamara is directed to the system of claim 2, wherein the user data is obtained before the test simulator has completed executing the simulation image (column 4, lines 46-57).

As per claim 8, McNamara is directed to the system of claim 7, wherein the user data is obtained while the test simulator is halted (column 4, lines 46-57).

As per claim 10, McNamara is directed to the system of claim 1, wherein the comparison result is used to debug the simulation design (column 7, lines 19-31).

As per claim 11, McNamara is directed to a method of evaluating a simulation comprising: executing a simulation image on a reference simulator to obtain golden data (column 5, lines 32-45);

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executing the simulation image on a test simulator to obtain test data (column 4, line 66 – column 5, line 4); selecting a portion of the golden data and a portion of the test data; and comparing the selected golden data to the selected test data to obtain a comparison result (column 7, lines 18-36).

As per claim 13, McNamara is directed to the method of claim 11 further comprising: debugging the simulation design using the comparison result (column 7, lines 19-31).

As per claim 14, McNamara is directed to the method of claim 11 further comprising: compiling a simulation design to obtain the simulation image (column 7, lines 12-19).

As per claim 15, McNamara is directed to the method of claim 11 further comprising: storing the golden data in a golden data repository (column 5, lines 32-45).

As per claim 16, McNamara is directed to the method of claim 11, wherein the step of selecting a portion of the golden data is performed dynamically (column 4, lines 46-57).

As per claim 18, McNamara is directed to the method of claim 11, wherein the step of comparing the selected golden data to the selected test data waits on storing the golden data in a buffer (column 5, lines 32-45).

As per claim 19, McNamara is directed to the method of claim 11, wherein the step of selecting a portion of the test data is performed dynamically (column 4, lines 46-57).

As per claim 20, McNamara is directed to the method of claim 11, wherein user data is used to select the portion of the golden data and the portion of the test data (column 4, lines 46-57).

As per claim 21, McNamara is directed to the method of claim 20, wherein the user data is obtained during the step of executing the simulation image on the test simulator (column 7, lines 12-19).

As per claim 22, McNamara is directed to the method of claim 21, wherein the step of executing the simulation image is halted to obtain the user data (column 4, lines 46-57).

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As per claim 23, McNamara is directed to the method of claim 20, wherein the user data comprises a mapping rule to map an implementation of the simulation design for the test simulator to an implementation of the simulation design for the reference simulator (column 5, lines 46-54).

As per claim 24, McNamara is directed to the method of claim 11, wherein the step of comparing the selected golden data to the selected test data is performed before completing the step of executing the simulation image on the test simulator (column 7, lines 18-36).

As per claims 25 and 27, McNamara is directed to a computer system for evaluating a simulation comprising: a processor; a memory; a storage device; and software instructions (column 6, lines 20-31) stored in the memory for enabling the computer system to perform method steps with the same limitations as claims 11 and 13 and are therefore rejected under the same prior art.

As per claims 28 and 30, McNamara is directed to an apparatus (column 6, lines 20-31) for evaluating a simulation comprising means for method steps with the same limitations as claims 11 and 13 and are therefore rejected under the same prior art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. **Claims 9, 12, 26 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara et al. (U.S. Patent No. 6,141,630).**

As per claim 9, McNamara is directed to the system of claim 1, but fails to specifically disclose wherein the comparison result is used to debug the test simulator. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the simulation evaluation system to debug the test simulator in order to generate reliable comparison results by verifying the tools used to evaluate the simulation.

As per claim 12, McNamara is directed to the method of claim 11 but fails to disclose debugging the test simulator using the comparison result. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the simulation evaluation method to debug the test simulator in order to generate reliable comparison results by verifying the tools used to evaluate the simulation.

As per claim 26, McNamara is directed to a computer system for evaluating a simulation comprising: a processor; a memory; a storage device; and software instructions stored in the memory for enabling the computer system to perform method steps with the same limitations as claim 12 and is therefore rejected under the same prior art.

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As per claim 29, McNamara is directed to an apparatus for evaluating a simulation comprising means for method steps with the same limitations as claim 12 and is therefore rejected under the same prior art.

5. Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over McNamara et al. (U.S. Patent No. 6,141,630) in view of Davidson et al (U.S. Patent No. 6,886,145 B2).

As per claim 6, McNamara is directed to the system of claim 5, but fails to disclose wherein the test simulator and the reference simulator execute the simulation image in lockstep.

Davidson teaches verification of partitioned testbenches in parallel (column 8, lines 10-17). McNamara and Davidson are analogous art because they are from the same field of endeavor, verifying and validating circuit designs. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of verifying a circuit design of McNamara with the lockstep simulations of Davidson in order to shorten the verification time (column 1, lines 46-51).

As per claim 17, McNamara is directed to the method of claim 16, but fails to disclose wherein the step of executing the simulation image on the test simulator and the step of executing the simulation image on the reference simulator is performed in lockstep. Davidson teaches verification of partitioned testbenches in parallel (column 8, lines 10-17). McNamara and Davidson are analogous art because they are from the same field of endeavor, verifying and validating circuit designs. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of verifying a circuit design of McNamara with the lockstep simulations of Davidson in order to shorten the verification time (column 1, lines 46-51).

Conclusion

6. The prior art made of record is not relied upon because it is cumulative to the applied rejection. These references include:

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1. U.S. Patent No. 6,678,645 B1 issued to Rajsuman et al. on 01/13/04.

7. All Claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suzanne Lo whose telephone number is (571)272-5876. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571)272-2297. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Suzanne Lo
Patent Examiner
Art Unit 2128

SL
03/22/06


KAMINI SHAH
SUPERVISORY PATENT EXAMINER